Citizen Science Projects (MOOC) 1.7

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Publication date:
2020

The term 'citizen science' is relatively new, but people have been participating in scientific research for over a century. In the late 1800s, some of the earliest citizen scientists were amateur bird watchers in America who wrote down bird observations on cards and posted them to ornithologists who were studying migratory bird patterns.

With the advent of the internet and smartphones with cameras, citizen science projects now cover a wide range of fields from Alzheimer's research to Zoology. The public's help in gathering and analysing data enables scientists to do research that otherwise wouldn't be possible.

Projects can have different characteristics:

+ **Action-oriented projects** encourage intervention about a local concern.
+ **Conservation projects** encourage better stewardship and management of natural resources.
+ **Investigation projects** conduct more traditional scientific research to generate new knowledge or understanding. Though often unstated, these projects aim to educate participants over time. They can be regional or international and have vast numbers of participants.
+ **Virtual projects** take place online-only and don't require participants to gather data in the field.
+ **Educational projects** make science learning, environmental awareness, and outreach their primary goals.

The term 'Citizen Observatory' is also recent. It comes from the fields of environmental monitoring and earth observation via satellite technology. There has been a movement towards empowering communities so that they can monitor their local environment and access the information needed to make environmental governance decisions. Citizen observatories build on citizen science approaches, and focus on understanding and looking after our environment. Observatories aim to bring together citizens, scientists and policymakers for better governance informed by citizen science data.

Citizen Observatories can be set up to monitor issues such as:

+ **Biodiversity**
    + The well-being of a single species
    + The biodiversity of a region
    + The presence of invasive species or pests
    + The health and biodiversity of freshwater ecosystems
    + The health and biodiversity of oceans
+ **Climate**
    + The weather
    + Climate change impacts
+ **Land-cover and land-use change**
    + Agricultural crop cover and crop health
    + Deforestation
    + Desertification
    + Soil sealing/permeability
    + Expanding suburbia
+ **Natural disasters**
    + Floods & Droughts
    + Forest fires
    + Earthquakes
    + Landslides
+ **City & urban environmental issues**
    + Drinking water quality
    + Air quality
    + Noise pollution
    + Odour pollution
    + Access to green spaces
+ **Natural Resources**
    + Fisheries
    + Forestry
    + Mining
+ **Astronomical monitoring**
    + Space

+ Stars
+ Planetary bodies

One way of engaging citizens in citizen observatories is through campaigns. A campaign is the public-facing phase of a citizen science project, and it is designed to bring about engagement and change. Campaigns are usually one-off events that run for short periods, like a single day or several weeks. Other approaches involve long term actions, in which citizens can contribute to environmental monitoring during their everyday activities or when coming across certain phenomena (e.g. extreme weather events or disasters).

In the next step, we will revisit the WeObserve Citizen Observatories and find out how they have tried to understand the environmental challenges that they are currently tackling.